

CAR-LESS California

California Alternative transportation for Recreation -
Leisure for Everyone that is Seamless and Sustainable



Literature Review: Supplement to Tech Memo #2 Outdoor Recreation and Transportation Patterns and Preferences

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INTRODUCTION



CAR-LESS California (California Alternative transportation for Recreation—Leisure for Everyone that is Seamless and Sustainable) is a research and planning project to identify current regional transit networks, develop transit corridor planning, and design and implement transit stations. The focus of CARLESS is to improve access to under-served visitors. CARLESS is a collaboration between multiple Federal Land Management Agencies (FLMAs): The National Park Service (NPS), U.S. Forest Service (USFS), Fish and Wildlife Service (FWS), and the Bureau of Land Management (BLM). These management agencies are also working with three California State Universities (Chico, San Francisco, and Channel Islands). Additionally, CA State Parks, Regional and County Parks, and local neighborhood and community groups are invited to identify public attitudes, preferences, and behaviors towards transportation in relation to parks and public lands.

This review supports the second Technical Memorandum for Phase I of the CARLESS project and is guided by the recognized importance of transportation planning based on public input and needs. During the first phase of this project, 16 extended team members completed a pilot survey exercise to determine their opinions on research topics as they relate to outdoor recreation and transportation preferences. Results guided the focus of this literature review. The focus is on transportation preferences to parks, and both transit preferences and activity/amenity interests while in parks.

Key topics include: willingness to pay, preferred modes of transportation, and attitudes surrounding Alternative Transportation Services (ATS). This current

literature review explores studies about recreation behaviors and preferences by exploring who's visiting the parks, travel times and choices, desired amenities and facilities, specifically as they impact a person's desire to visit a destination. Another important focus of this literature review relates to accessible transit options for people with disabilities. This review of relevant literature focuses on recent studies, with a few older, seminal studies included for context, and added perspective.

TRANSPORTATION PREFERENCES

Transportation preferences regarding visiting parks and public lands are a focus of this literature review. It is important to note that what people prefer, versus what they can afford and what is available, may be

distinctly different. Some parks provide alternate transportation systems (ATS), such as buses, shuttles and/or bike paths, while other parks mainly have access for people driving their own automobiles.

FLMAs concerned with transportation, parks, recreation, and tourism are looking at transportation data in regards to how transportation impacts the environment and the visitor's experiences.¹

This review will focus on visitor's transportation preferences and experiences and not on environmental impacts of transportation choices.

Transportation preferences to parks

Transportation issues in getting to and from parks are "complex and challenging especially given the seasonal nature and rural location of many parks."² Current transportation options to parks may be based on the fact that America is an automobile-oriented society. According to the Bureau of Transportation Statistics, "nine out of ten long-distance trips are by personal vehicle, and personal vehicles are used for almost all trips less than 300 roundtrip miles."³ In addition, "87 percent of daily trips take place in personal vehicles."⁴ NPS studies show that the majority of visitors arrive in automobiles and use their automobiles as their primary mode of transportation while in the park.⁵

Visitor use studies would suggest that people prefer to drive personal vehicles when getting to and from parks.^{5, 7} People also enjoy driving for pleasure along the scenic highways in and around public lands.⁶ Automobile use and visitors' experiences are directly impacted by the capacity of parks to handle visitor crowding, traffic congestion, visitor stress, and parking shortages.⁷ During peak visitation days, visitors may be unable to find parking and

this could cause stress to the visitors. Some studies have shown that parking shortages can cause people to park their cars illegally.⁷ Situations like this could have dangerous implications if roadways and emergency access routes are blocked. FLMAs manage transportation issues to ensure safety in the parks and provide visitors with access to enjoyable recreational experiences.

Transportation issues in parks are distinctly unique and separate from traditional transportation issues because parks are recreation destinations with scenic attractions that people want to stop and visit.⁸ Traditional transportation management involves determining how to get people from one place to another quickly, seamlessly, and safely. Transportation in a tourist destination is different in that people likely want to make multiple stops and tend to be focused on seeing the sights.⁸

Traveling on vacation is a case in which the journey is also the destination. However, overcrowding and traffic congestion can negatively impact visitors' experiences. With all this in mind, determining a park or protected area's "carrying capacity" is an important research topic. Carrying capacity is defined as "the amount and type of use that can be accommodated in a particular area while sustaining desired biophysical resources and opportunities for quality visitor experiences."⁹ In other words, the carrying capacity of a road is the amount of vehicles it can sustain day-to-day, year-after-year, without degrading natural resources, and while sustaining visitor demand. Alternate transportation systems (ATS) are designed to address parks' carrying capacities by providing alternative transportation options to lessen dependence on personal vehicles.¹⁰ Examples of ATS are park shuttles, park and ride opportunities,

and bicycle routes, basically anything other than private vehicles.¹¹

The NPS has an Alternative Transportation Program that is helping guide implementation of ATS in and around parks.⁵ In addition, federal transportation bills, such as Transportation Equity Act for the 21st Century (TEA-21) and Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), can provide funds to FLMA's for researching and implementing ATS.^{5,12} The nationwide focus on providing ATS has likely increased the number of research studies available in determining public preferences for different transportation systems.

Public Preferences for Alternative Transportation Systems (ATS)

Freedom

A perceived sense of freedom emerged as a defining quality of what people value in their leisure activities.¹⁰ In his Yosemite study, White states "perceived freedom appears especially salient and influential for transportation- related decision-making, behavior, and management preferences in the context of a national park visit."¹¹

Maintaining a perceived sense of personal freedom has consistently appeared in studies as a determinant for approval or disapproval of ATS.^{10,11} Studies suggested that visitors could be supportive of voluntary shuttle services, but less so of mandatory ATS, because of a perceived loss of freedom.¹³ Visitors want to ensure they can travel to and around parks while maintaining freedom to stop and sightsee. This study also found differences of opinion across ages. Older visitors (defined as people over 50) preferred to travel by personal vehicle.¹⁰ People with young children also preferred to travel by personal vehicle.¹⁰ It is possible

that these preferences were due to equipment and gear that these populations tend to need for traveling. The importance of bringing equipment and or gear could be a personal determinant for shuttle usage.

In some instances, shuttle service increased visitors' perceived sense of freedom by allowing them to sightsee without the responsibility of driving and being focused on the road as opposed to the views around them.¹⁴

Bus Preferences

The extent of bus coverage also relates to visitors preferred modes of travel to and around travel destinations.¹⁰ By providing a variety of transportation routes and options, visitors may perceive enhanced personal freedom by using ATS, as opposed to personal vehicles.¹⁰ In order to ensure positive public experiences, buses need to provide access to popular park destinations.^{10,14} Another potential incentive for use is for buses to have short wait times.¹⁰ Studies have also shown that people prefer buses to be comfortable.¹⁵ Additional incentives for buses would be to have a park ranger on the bus to provide an educational experience. Other potential attractive bus options are the open-air electric trams which provide a unique transportation experience.

By providing attractive bus options, FLMA's may influence visitors' decision to use buses. Buses can carry more people than personal vehicles; therefore increased bus usage could reduce strain on roads and park resources. Increased bus usage, coupled with decreased automobile usage could also decrease vehicle traffic congestion.¹⁶ Management agencies also need to be sensitive to crowding issues that can correlate with bus usage.

Sensitivity to Crowding

Rocky Mountain National Park (RMNP) was one of the first national parks to implement ATS in 1978.⁷ Studies about public perceptions of ATS in this location can provide insight for researchers and FLMAs. This study highlighted the finding that people were most likely use a transportation choice that enhanced their ability to find solitude. Experiencing solitude in the wilderness is a personal value and a management objective as stated in the Wilderness Act of 1964.¹⁷ The importance of solitude for park visitors is another example of people's recreation values influencing their transportation choices. In order to ensure that ATS enhances opportunities for solitude, it is important that FLMAs can regulate when, where, how often, and how many visitors are dropped off by the shuttle bus service.⁷ In some cases, if buses run less frequently and are transporting large groups of people, there are chances for overcrowding at popular scenic destinations and this can negatively impact a person's ability to experience solitude.⁷ The difficulty lies in finding the appropriate balance between providing frequent service with short wait times and providing more infrequent service with the potential for overcrowding at trail.⁷ Overall, researchers found that visitors were willing to use ATS when it resulted in decreased traffic congestion and increased solitude.⁷

Prior Experience with Parks and ATS

Some studies have examined visitors' preferences for ATS in as they relate to their experience within the park and with ATS. Research has shown that visitors who have prior experience with a park and with ATS are more likely to have more positive opinions and intents to use ATS.^{10, 18} One study of visitors in Yosemite National Park indicated that return visitors may have been more supportive of ATS because when comparing their ATS experience to past

experiences, ATS may have provided a less crowded option that was reminded them more of their prior visits to the park.¹⁰

Another study conducted in the Golden Gate NRA (cited in the same YOSE 2011 report above) indicated that proximity of a park to urban environments was positively correlated with increased approval for ATS.¹ Overall, past studies suggest that as visitors become accustomed to ATS in national parks, they are likely to be supportive.^{10, 17}

Willingness to Pay

Determining travel preferences and acceptable ATS options for visitors is only half of the solution to the transportation problem. Implementing transportation systems costs money; more research is needed to determine where funding will come from to support these systems. A major question is whether visitors would be willing to pay for these services.

Loomis and Keske (2009) conducted an interesting study to determine potential impacts of the Great Recession on the outdoor recreation industry.¹⁹ They replicated a 2006 survey distributed to hikers in Colorado. The survey had questions about visitor spending and willingness to pay for costs associated with their trips. Results indicated that nature-based recreation in this area did not experience reductions in most categories of visitor spending or total number of visits between the two study years. These results imply that nature-based recreation may represent an economically stable industry.¹⁷ These results are specific to this mountain area in Colorado. However, this is a suggested area for future research to ensure public support and sustainability of implemented ATS.

Other research studies have focused on visitors' willingness to pay for ATS. In

2005, Sims and others conducted a survey to determine public acceptance of a park shuttle system in Great Smoky Mountains National Park.²⁰ Seventy-five percent of survey respondents supported a free, mandatory shuttle system. However, support dropped to 51% if a fee was charged for the service.^{18,20} Across multiple studies, park visitors have stated support for free or low cost ATS, with significantly less support for fee-based systems.^{1,6,7,10,12,18,19}

Results from these particular studies imply that visitors are not willing to pay directly for ATS. However, the costs could be transferred into other entrance or service fees in order to provide ATS services that can protect and preserve the park and its resources. Regardless of the available ATS, people will choose to visit a park because of their perceived value of the natural resources and the recreational activities at the park. Therefore, when researching transportation preferences, it is important to also look at recreation preferences.

RECREATION PREFERENCES

Recreation preferences are heavily researched topics in the fields of recreation, tourism, and natural resource management. Recreation preferences impact a person's desire to travel to a park or public area based on perceived benefits of visitation. There are distinct recreation opportunities available at each park and public space that will be addressed by CARLESS California.

Recreation Opportunity Spectrum

The Recreation Opportunity Spectrum (ROS) is a well-known framework that could be used to inventory, classify and manage outdoor recreation resources.²¹ ROS allows managers to estimate demand for recreation opportunities and model outputs, which are estimated capabilities to provide preferred recreation opportunities.²¹ ROS

can be used in conjunction with other research for recreation and tourism planning by allowing management agencies to define and map potential recreation opportunities.²¹

When identifying transportation options for recreational visitors to parks, it is important to acknowledge that groups tend to have exclusive recreational preferences and behaviors that could be based on social values, group traditions, as well as demographics.^{22,23} Studies have shown distinct differences among race, gender, age, education, income, residence, and household size.^{23,24}

Changing Demographics in California

For CARLESS California, attention will be paid to the project area. The demographics of California are rapidly changing; park managers and staff can look at Census tract information for people living by the parks and public places and demographic research studies to anticipate future desires and barriers to recreation in parks.

The following sample data includes relevant population projections for California based on the U.S. Census Bureau:²⁵

Size and Growth of Regions and States

- California is expected to be the fastest growing state from 1995 to 2025.
- California is expected to contain 15% of the nation's population by 2025.
- This increase will be an approximate addition of 17.7 million people.
- California is projected to add 8 million international migrants; this would be greater than one-third of the immigrants added to the U.S. population over the 30 year period (1995-2025).

Race and Hispanic Origin Distribution

- The Asian population is the fastest growing in all regions, especially in the West, where an anticipated 7 million people are anticipated to be added. This is equivalent to 56% of the total Asian-American population increase.
- California is expected to have 41% of the Nation's 21 million Asians.
- California's Hispanic population is expected to more than double by 2025; CA will soon have approximately 36% of the nation's total Hispanic population.

Age Distribution

- Over the 30-year projection period, CA would continue to rank first in having the largest number of elderly residents.
- Across the nation, as the Baby Boomer generation (born between 1946-1964) reaches retirement after 2010, the percentage of the population that is elderly (in comparison to other age groups) will increase rapidly.

These projected population increases suggest rapid and large-scale changes in size, race/ethnicity, and age of California's population. It is important to take note of the increases in Asian, Hispanic, and elderly populations in order to engage this audience in park activities and ensure public interest and support for parks and recreational areas. Some research attempts to understand what different ethnic groups are looking for and value in recreational parks.

Recreation preferences reviewed across demographics

Studies have shown distinct recreation preferences among race/ethnicity, gender, age, education, income, residence, household size, and other variables.

Race and ethnicity

Studies by Byrne and Wolch (2009) examined past and present research on nature, race, and parks.²⁶ They summarized a variety of studies to highlight recreation preferences for desired amenities and recreation activities by 'ethno-racial' groups.^{23,27} There is a rich body of literature on this topic; the following examples include what they, and other studies, have found among different groups:

- Latinos tend to socialize with extended family and large groups and desire access to group facilities such as parking, picnic tables and restrooms.
- Latinos have also shown preferences for picnicking, camping, soccer, and hiking.
- Asians emphasized preferences for park visits with extended family or organized groups, valued 'scenic-beauty' and showed preferences for walking, picnicking, volleyball, fishing, and golf.
- African-Americans tend to enjoy social, sports-oriented, urban park settings and enjoy organized recreation opportunities and sitting, talking, and walking.
- Whites have shown preferences for solitude and may prefer secluded natural settings. Whites have shown recreational preferences for exercise, camping, hiking, boating, swimming, cycling, and dog walking.

Byrne and Wolch (2009) developed a model (see Figure 1) to illustrate historical and cultural contexts of park provisions, as they impact park spaces, perceptions, and ultimately a parks use or non-use by visitors.

Furthermore, a relevant study conducted by Burns, et al. in 2008 involved focus groups with ethnically diverse populations where participants were asked about their outdoor recreation preferences, interests, and experiences.²² This study was conducted in

Oregon, but the methods used in this study could be also used to direct future research in other areas. This study also included

outreach strategies for target demographics that could be relevant across California and the nation.

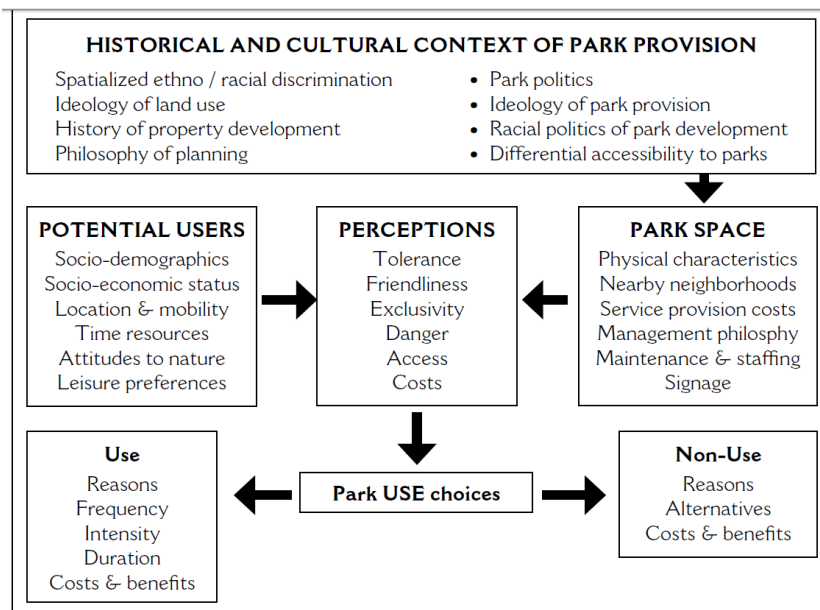


Figure 1. Space, race and park use (Byrne & Wolch (2009))

Visitor Research: Studies of Diversity

One of the emerging themes from the Burns, et al. 2008 study²² about Asian Americans was that participants enjoyed recreating with family members, including children and extended family. One of the top identified recreation constraints identified by Asian Americans was a lack of information. When asked about where they looked for information about recreational opportunities, participants mentioned the following: Park information in multiple Asian languages, Asian American organizations, and social service agencies. A recommended outreach technique was to publicize benefits of recreation, such as health, culture, and education, to the community.

African American focus group participants preferred to recreate in local parks that were close to city centers and well-maintained with clean amenities. Participants discussed that one of the constraints preventing African Americans from recreating was

stereotypes. A suggested outreach opportunity was to use local businesses to inform the community about recreation opportunities, such as barbershops, restaurants, and public health offices.

Latino participants expressed interest in recreation facilities that will accommodate large families. One of the most important recreation benefits for these participants was to spend time with their families. Transportation and lack of information were constraints to recreating for many participants. Suggested ways to overcome these barriers included: Provide information in Spanish, attempt to inform families about recreational opportunities by sending information to schools where children are likely to bring that information home to their parents, using Latino organizations, and advertising through *Univision* (Spanish language television).

In California, it is especially important to focus on the preferences and needs of Latino

park visitors. Chavez has conducted many research studies on visitor diversity and her study results have been, and should continue to be used, to inform FLMA's about preferences and needs of Latino park visitors. One study by Chavez (2008) is based on 17 research projects conducted over the past 16 years conducted mostly in Southern California.²⁷ Research indicates that Latinos may have distinct expectations, preferences, and barriers to participation that other groups may not have.^{27,28,29}

Highlights of findings from studies in urban national forests in Southern California:^{27,28}

- Latinos tended to visit parks in large groups.
- Visitors preferred to receive information about the parks (e.g., things to see and do, rules and regulations, local plants and animals) on-site.
- Latinos were likely to recreate at developed sites and preferred amenities included: restrooms, picnic tables, trashcans, water faucets, cooking grills.
- Studies suggest that most visitors were day users and prefer stream play, picnics, and available hiking trails.

In 2006, a study was conducted by Roberts to determine constraints to park use by people of color and the Golden Gate National Recreation Area (GGNRA).²⁹ According to the National Parks and Conservation Association, the GGNRA is one of the top ten most visited national parks. Eight focus groups were held with nearly 100 participants of different racial backgrounds. The focus groups were "racially homogeneous." Results from this study found differences within (and across) ethnic groups.²⁹ Other factors influencing recreation preferences: Education, income, where they were born, and level of literacy.

This study is particularly important because it shows that recreation preferences are influenced by a myriad of factors and cannot be generalized among ethnic groups. As stated by Roberts and Chitewere (2011)²⁹ "Not every ethnic group experiences national parks the same way, nor do members of an ethnic group use parks for the same purpose. Rather, a common thread that ran through each group was that there were constraints to using parks in ways that were culturally appropriate. Despite the differences within and among ethnic groups, it became clear that focus group participants were generally in agreement when it came to discussing barriers to park visitation."²⁹

Common barriers to visitation, for example, were: Transportation, cost, lack of written materials and information about the park (verbal or written), and lack of ethnic representation in the workforce. The methods and results used in this study can be duplicated for future studies.

AGE

Another noteworthy study in Chicago looked at the role of residential location, race, and age and how they impacted preferences and behaviors.³⁰ In this study, age was found to be a stronger predictor of support or nonsupport for additional parkland than race or residential location. Older adults were less likely to visit parks than the younger participants in this study.³⁰ This study was included for reference because a multitude of factors contribute to a person's recreation preferences and behaviors.

ACCESSIBILITY

In America there are approximately 43 million people with a disability.³¹ This section provides a brief look at accessibility as it relates to transportation and recreation preferences. Federal lands and park are

required to be accessible as mandated by the federal Americans with Disabilities Act of 1990. Additionally, the Wilderness act states that all people have the right, regardless of ability to enjoy the wilderness experience.³² Studies have shown that “people with disabilities visit the wilderness for the same variety of reasons as people without disabilities.”³³ Common motivations for people to visit the wilderness are: To experience nature, and to experience a personal challenge.³¹ Studies have shown that people with disabilities prefer a wide range of recreational activities such as, walking, family activities, sightseeing, picnicking, fishing, bird-watching, camping, boating, and hunting.³⁴ In addition, studies have found people with disabilities to favor wilderness preservation over accessibility.³⁵ These findings relate to people valuing wilderness in its natural state, without development.³³

What people with disabilities appear to need from FLMA is clear information about the levels of access in parks and wilderness areas to make informed travel decisions.

Management agencies can also partner with outdoor recreation providers that specialize in providing outdoor and wilderness opportunities for people with disabilities. FLMA will also need to ensure that buses and transportation stops are accessible for persons with disabilities. On the whole, research studies indicate that people with disabilities have similar recreational values and preferences as people without disabilities.^{31,32,33,34}

BRIEF SUMMARY

All studies cited in this review represent only a small fraction of the relevant bodies of work about visitors’ recreation preferences. The overarching message derived from these studies is that people who traditionally do not use parks may share

common barriers. These barriers could be related to their race/ethnicity, gender, age, education, income, residence, and/or household size. Likely, a variety of other factors influence their decision to visit a park or not, including vehicle ownership.

Ideally, these studies provide FLMA with an overview of methods, analysis and ideas to direct future research. Once specific transit corridors and station areas are determined for CARLESS, studies from those geographic locations can also be used for more in depth, site-specific analysis.

Suggestions for future research

The research studies cited here can be used as reference for future studies and for baseline information about visitor preferences, and transportation and recreation trends.

An excellent study of national park visitors can offer ideas for essential information to also gather for future. Schuett and Hollenhorst³¹ analyzed NPS visitor data collected across 180 different parks to provide an analysis of park visitors and visitation from 1990-2008. Methods used in this study could be replicated, where visitor data is available, to gather longitudinal data and analyze visitors and visitation to other public parks. Findings from this study could be further explored to determine if they are applicable to other sites. Census tract data can be used also to determine the age, education level, race, ethnicity, income, of people living near the parks in order to determine likely park visitors. In addition, by knowing more about the communities surrounding the parks, FLMA can outreach to local residents and inform populations about the parks’ attractions.

Trends in park visitation across all 180 national parks can be reflected in the following sample study results:³⁶

- 11.3% of park visitors were seniors. Visitation by seniors appeared to be rising, which could be related to Baby-Boomers entering retiring age.
- 25.7% of visitors had children under 18
- Personal group size averaged 4.5 persons.
- 77% of visitors came for day use (as opposed to overnight).
- Many visitors were willing to travel long distances to visit a park.
- The average distance traveled was 672.3 miles.
- 25.7% of visitors lived within 100 miles of the park.
- Driving distances varied across park types:
 - Mean driving distance for natural parks/monuments: 864.6 miles
 - Mean driving distance to urban recreation/shoreline areas: 290 miles
- Natural parks and monuments had the highest percentage of international visitors.

These results are a snapshot of averages across an 18-year span. Findings cannot be generalized yet should be considered when researching visitation to other parks and public lands. Study methods could be duplicated with visitor data from other sources; this can provide insight into who is visiting the parks so that FLMAs can use this data to attract more visitors and public support for parks and recreation spaces.

CONCLUSIONS AND LOOKING TO THE FUTURE

A review of relevant research has shown public support for ATS that is free or low cost, optional as opposed to mandatory; reduce traffic congestion while allowing visitors perceived personal freedom and solitude in nature.^{1,6,7,10,12,18}

Many of the studies reviewed for this paper offered examples within a particular park and the most popular research methods were public surveys, focus groups, and interviews. All park preference research is dependent on the *place*. The amenities, location, scenic attractions, and associated travel costs are all factors influencing and affecting a visitors desire to travel and their travel experiences. Therefore, research study results should probably be applied across parks or public areas theoretically until research specific to the park or geographic location of interest confirms or denies results.

The CARLESS planning team efforts involved listening sessions with the public to identify public preferences, sites, and implementation of ATS at, and near, the parks. Both the Core Team and Extended Team are aware of the parking difficulties, vehicle traffic congestion, and extent of bus coverage for the transit corridors and the parks themselves. In general, it would seem that if management agencies identify an affordable and comfortable bus option, with enough frequency to limit waiting time, and multiple stopping points at popular tourist destinations, visitors would have an enjoyable travel experience. This is not to say that a shuttle would be visitors' top preference, but if visitors are still able to experience solitude and perceived personal freedom, then they would likely use ATS. Furthermore, ATS could provide additional opportunities for people without cars to visit the parks. By increasing transportation options, ATS could increase park visitation.

There are many studies that analyze park visitors' attitudes, behaviors, and preferences. These findings are site specific, but commonalties and patterns can be found across multiple studies. All demographic variables in addition to income, education, family size and geographic location impact a

persons desire to visit a park or protected area, how they prefer to get there, what amenities they desire, and what activities they prefer to do when they get there.

When additional studies are conducted, researchers should collect this demographic background information from visitors for use in data analysis of perceived attitudes, behaviors, and preferences for recreation, transportation, and tourism in order to maximize pertinent analysis and appropriate application of results.

It would be beneficial for FLMA's to determine exactly which parks are being targeted for transportation improvements and then focus future research on findings from those parks. Management agencies can use past research studies, conduct focus groups and surveys, and identifying user

demographics to estimate visitors' transportation and recreation preferences.

FLMA's can then target their outreach and community education to their audiences of interest to build public support for the parks, generally, and the transportation services to and around parks, in particular.

The CARLESS California team is working across parks/public lands and organizational boundaries to explore, determine, and implement attractive and interconnected alternative transportation options to parks that will increase public access and use to parks. This plan has a clear vision and all the tools to succeed. Ideally, ATS systems will be implemented and used by the public so vehicular congestion and strain on natural resources will be limited while increasing park visitation opportunities and enjoyment.



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